

REMARKS/ARGUMENTS

Claims 1-17 are pending, with claims 3, 4, 9, and 10 being withdrawn from consideration.

The Amendment to the Specification

As suggested by the Examiner, the specification has been amended at page 5, line 6 to replace "filter" with --communication fire wall--. This amendment is supported by Figure 2 of the specification as filed and no new matter has been added.

The Amendments to the Claims

Claim 1 has been amended at line 2 to specify that the blasting network includes an assembly of detonators. This change is supported at page 4, line 20 of the specification as filed. Claim 1 has also been amended at lines 6 and 8-9 to replace "blasting network" with --assembly of detonators--. This change is consistent with the change at line 2. For consistency, claim 1 has also been amended at line 10 to insert --to the assembly of detonators-- prior to "via the communication link."

Claim 2 has been amended at line 3 to replace "blasting network" with --assembly of detonators- -. This change is consistent with the change made at line 6 of claim 1.

Claim 3 has been amended at line 3 to replace "blasting network" with --assembly of detonators- -. This change is consistent with the change made at line 6 of claim 1.

Claim 4 has been amended at line 4 to replace "blasting network" with --assembly of detonators- -. This change is consistent with the changes made in claims 1 and 3.

Claim 6 has been rewritten in independent form including all the limitations of amended claim 1 and the limitation of claim 5 regarding the step of designating at least two unsafe messages.

Claim 7 has been amended at line 2 to specify that the blasting network includes an assembly of detonators. This change is supported at page 4, line 20 of the specification as filed. Claim 7 has also been amended at lines 7,8 and 9 to replace "blasting network" with --assembly of detonators--. This change is consistent with the change made at line 2. For consistency, claim 7 has further been amended at line 12 to insert --to the assembly of detonators-- prior to "via the communication link."

Claims 8-9 have been amended at line 1 to replace "control system" with --system for controlling a blasting network-- for greater consistency with the language of claim 7, from which they depend.

Claim 10 has been amended at line 1 to replace "control system" with --system for controlling a blasting network-- for greater consistency with the language of claim 7, from which it depends. Claim 10 has also been amended at line 4 to replace "blasting network" with --assembly of detonators--. This change is consistent with the change made at line 9 of claim 7.

Claims 11-13 have been amended at line 1 to replace "control system" with --system for controlling a blasting network-- for greater consistency with the language of claim 7, from which they depend.

Claim 14 has been amended at line 1 to replace "control system" with --system for controlling a blasting network-- for greater consistency with the language of claim 7, from which it depends. Claim 14 has also been amended at

line 3 to specify that the blasting network includes an assembly of detonators. This amendment is supported at page 4, line 20 of the specification as filed.

Claims 15-17 have been amended to depend from claim 14. To eliminate redundancy with claim 14, the phrase "including a control system" has been deleted from line 1 and the phrase "connected to a blasting network" has been deleted from line 2 of each of claims 15-17. Furthermore, claims 16-17 have been amended to replace "control system" with --system for controlling a blasting network-- for greater consistency with the language of claim 14.

It is believed that no new matter has been added by any amendment to the claims.

Claims 14-17

The Office Action states that claims 14-17 are independent claims in that they claim a blasting system including a control system rather than a system for controlling a blasting network. Applicants respectfully traverse the holding that claims 14-17 are independent, rather than dependent, claims. It is believed that these claims include every limitation of the claim(s) from which they depend. Since the test as to whether a claim is a proper dependent claim is that it shall include every limitation of the claim from which it depends (MPEP 608.01(n)III), it appears that claims 14-17 are proper dependent claims.

In particular, amended claim 14 depends from claims 7-10. Amended claim 14 includes every limitation of claims 7-10 and therefore appears to be in proper format for a dependent claim. Applicants note that claim 14, as well as claims 8-10, have been amended for greater consistency with the language of claim 7. These amendments may clarify the relationships between the claims.

Amended claims 15-17 depend from claim 14. Amended claims 15-17 include every limitation of claim 14 and therefore appear to be in proper format for dependent claims. Applicants note that claims 15-17 have been amended to depend from claim 14 and for greater consistency with the language of claim 14. These amendments may clarify the relationships between the claims.

In view of all the foregoing, Applicants respectfully request withdrawal of the holding that additional claims fees for independent claims in excess of three are required. No additional claims fees have been submitted at this time.

The Objection to the Specification

The Office Action suggested deleting the term "filter" at page 5 line 6, and replacing it with the phrase "communication fire wall." The requested correction has been made. In view of the amendment of the specification at page 5, line 6, Applicants respectfully request reconsideration and withdrawal of the objection to the specification.

The 35 U.S.C. 102(b) Rejections

Claims 1, 2, 7, 8 and 11-17 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,404,820 to Hendrix. Applicants respectfully traverse the rejection. The Office Action states:

In regards to claim 1, Hendrix clearly discloses a method of controlling a blasting network (10) which includes the steps of designating at least one unsafe message, placing a communication link between a control unit (16) and the network in a control mode in which the communication link is monitored for the unsafe message, in said control mode preventing the unsafe message, when detected, from reaching the blasting network, and placing the communication link in an operational mode in which any previously designated unsafe message is allowed to reach the blasting network, and wherein in both the control mode and the operational mode any message which has not been designated as unsafe is permitted to be transmitted via the communication link, in figures 1,

4, and 5, in column 3, lines 22-28, column 4, lines 19-22 and lines 46-68, column 5 lines 1-12, lines 28-33, lines 45-55, and lines 66-68, and column 6, lines 1-5 and lines 38-41.

In regards to claim 2, Hendrix clearly discloses a method wherein the control mode of the communication link the or each unsafe message is prevented from reaching the blasting network by preventing the onward transmission of the unsafe message in column 4, lines 46-52.

In regards to claim 7, Hendrix clearly discloses a system for controlling a blasting network (10) which includes a control unit (16) and a communication link for the network, the communication link being capable of being placed in a control mode and in a operational mode, and a monitoring device (6) for monitoring the communication mode for at least one previously designated unsafe message, wherein the communication link in its control mode prevents any detected unsafe message from being transmitted to the blasting network and in its operational mode permits any previously designated unsafe message to be transmitted to the blasting network, and wherein in both its control mode and its operational mode the communication link permits any message which has not been designated as unsafe to be transmitted via the communication link, in figures 1, 4, and 5, in column 3, lines 22-28, column 4, lines 19-22 and lines 46-68, column 5 lines 1-12, lines 28-33, lines 45-55, and lines 66-68, and column 6 lines 1-5 and lines 38-41.

Hendrix discloses a laser-initiated ordnance controller (LIOC) in which a laser beam is used for explosive ignition. During operation, the LIOC receives command signals from a control panel or remote computer of a flight system that provides Built-in-Test (BIT), Arm, and Fire commands (col. 2, lines 12-15). The LIOC contains a polarization switch (P-switch) which requires precise voltage levels and timing to be turned on or off (col. 4, lines 27-28). In the off-condition (safe condition), the P-switch will only pass the BIT diode polarization and block the laser polarization. When in the on-condition, the laser polarization is passed and the BIT diode polarization is blocked (col. 4, lines 49-52). For example, when an arm signal, an unsafe message, is provided, the polarization switch is opened for approximately 200 microseconds so that the laser pulse is transmitted through the device (col. 6, lines 63-67). Optical energy is therefore prevented

from reaching the pyrotechnic device except when the system is armed (column 5, lines 28-33). On the firing signal the laser flashlamp is fired simultaneous with the polarization switch activation (col. 2, lines 38-39). Therefore, the safe and armed device is either deactivated (safe mode) or activated.

Claim 1 of the present application requires the step of “placing a communication link between a control unit and the network in a control mode in which the communication link is monitored for the unsafe message, in said control mode preventing the unsafe message, when detected, from reaching the assembly of detonators.” As defined in the specification at page 2, lines 19-21, “unsafe message” is used to designate a message or command which, if received, could result in unwanted or adverse conditions or consequences. Hendrix’s device does not appear designed to prevent an unsafe Fire message from reaching the Hendrix’s multiple fiber optic channels (10). Instead, when a Fire command is given, the P-switch allows transmission of the laser pulse through the S&A device to the optical fibers (col. 5, lines 1-12). Similarly, when an unsafe Arm command is given, the P-switch also opens. Therefore, Hendrix’s device does not appear to have a control mode in which an unsafe message such as an Arm or Fire command is prevented from being transmitted.

Furthermore, amended claim 1 includes the limitation that “in both the control mode and the operational mode any message which has not been designated as unsafe is permitted to be transmitted to the assembly of detonators via the communication link” (emphasis added). Since a BIT command is transmitted through Hendrix’s device in safe mode, it would appear that a BIT command can be classified as a message which has not been designated as unsafe. However, when Hendrix’s device is in operational mode in which the laser pulse can be transmitted through the device, safe messages such as BIT commands cannot be transmitted. The polarization switch cannot transmit the BIT energy when it is switched to transmit the polarized laser beam.

Therefore, Hendrix's device in operational mode does not appear to permit any message which has not been designated as unsafe to be transmitted.

In view of all the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 1. Claim 2 depends from and contains all the limitations of claim 1. Claim 2 further contains the limitation that "the or each unsafe message is prevented from reaching the assembly of detonators" (emphasis added). As previously discussed, Hendrix's device does not appear designed to prevent an unsafe Fire message from reaching the Hendrix's multiple fiber optic channels (10). Instead, when a Fire command is given, the P-switch allows transmission of the laser pulse through the S&A device to the optical fibers (col. 5, lines 1-12). Therefore, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 2.

Claim 7 contains the limitation that the system includes "a monitoring device for monitoring the communication link for at least one previously designated unsafe message." Applicants respectfully disagree that Hendrix's acousto-optic deflector (6) monitors the communication link for at least one previously designated unsafe message. Although Hendrix's acousto-optic responds to a correct format fire command by moving to the selected event channel, it is submitted that this does not equate to monitoring the communication link for an unsafe message.

Claim 7 also contains the limitation that "the communication link in its control mode prevents any detected unsafe message from being transmitted to the assembly of detonators" (emphasis added). As previously discussed, Hendrix's device does not appear designed to prevent an unsafe Fire message from reaching the Hendrix's multiple fiber optic channels (10). Instead, when a Fire command is given, the P-switch allows transmission of the laser pulse through the S&A device to the optical fibers (col. 5, lines 1-12).

Claim 7 further contains the limitation “wherein in both its control mode and its operational mode the communication link permits any message which has not been designated as unsafe to be transmitted via the communication link” (emphasis added). As previously discussed, when Hendrix’s device is in operational mode in which the laser pulse can be transmitted through the device, safe messages such as BIT commands cannot be transmitted. Therefore, Hendrix’s device in operational mode does not appear to allow any message which has not been designated as unsafe to be transmitted.

In view of all the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 7. Claims 8 and 11-17 depend from and contain all the limitations of claim 7. Therefore, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 8 and 11-17.

The 35 U.S.C. 103 Rejections

Claim 5 was rejected under 35 U.S.C. 103(a) as being unpatentable over Hendrix in view of Early. The office action states:

Hendrix discloses the claimed invention, except for illustrating that the method of designating an unsafe message includes two unsafe messages. Early teaches in figure 4, column 3 lines 55-60, column 7 lines 49-54 and lines 58-67, and column 8 lines 1-4 and lines 46-52, that a first laser (34) is used to provide a high power peak short duration pulse and that a second laser (36) is used to provide a low peak power long duration pulse, which are combined in order to regulate the rate and duration of laser energy delivery. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ Early’s method of combining the energy of two lasers in order to achieve the desired effect of an optimal ignition performance.

Early relates to a multiple laser pulse ignition method and apparatus.

Claim 5 includes all the limitations of claim 1 and further includes the step of designating at least two unsafe messages. As previously discussed, Hendrix does not teach or suggest the limitation of claim 1 that when the communication link is in control mode, an unsafe message such as a FIRE or ARM command is prevented from reaching the assembly of detonators. In addition, as previously discussed, Hendrix fails to teach or suggest the limitation of claim 1 that when the communication link is in operational mode any message which has not been designated as unsafe (such as a BIT command) is permitted to be transmitted to the assembly of detonators via the communication link. The combination of Early with Hendrix does not appear to cure the deficiencies of Hendrix. Since the combination of references cited does not appear to teach or suggest all the claim limitations, a *prima facie* case of obviousness does not appear to have been established. Therefore, applicants respectfully request reconsideration and withdrawal of the rejection of claim 5.

The Objection to Claim 6

Claim 6 was objected to as being dependent upon a rejected base claim. Amended claim 6 has been rewritten in independent form to include the limitations of amended claim 1 and the limitation of claim 5 regarding the step of designating at least two unsafe messages. It is believed that the rejections of claim 1 and its dependent claims have been overcome. Therefore, Applicants respectfully request reconsideration and withdrawal of the objection to amended claim 6.

The Withdrawn Claims

It is believed that the rejections of generic claim 1 have been overcome. Therefore, applicants respectfully request rejoinder of claims 3, 4, 9 and 10, which were withdrawn from consideration.

The Drawings

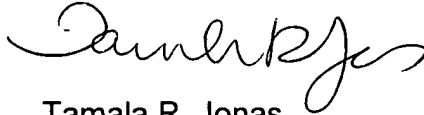
Applicants respectfully request clarification of whether the drawings filed on April 1, 2002 are accepted by the Examiner.

CONCLUSION

This application being in condition for allowance passage to issuance is respectfully requested.

It is believed that no fee is due with this submission. If this is incorrect, please deduct any required fee, including any fee due for extension of time, from deposit account 07-1969.

Respectfully submitted,



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TRJ:lem:1/15/04